Please refer to http://madindex.bnpparibas.com for more information regarding the index.
Introducing the BNP Paribas Multi Asset Diversified (MAD) 5 Index

The BNP Paribas Multi Asset Diversified 5 Index ("BNPP MAD 5 index") is a rules-based index comprised of eight components – three equity futures indices, three bond futures indices and two commodity indices (the "Hypothetical Portfolio"). BNPP MAD 5 Index seeks to measure the value of a hypothetical exposure to a range of asset classes and geographic regions based on momentum investing principles.

On a daily basis, BNPP MAD 5 Index determines weights of its components, using a rules-based methodology which seeks to identify weights for the components that would have resulted in the Hypothetical Portfolio with the highest return subject to a certain level of volatility. On any given day, this methodology will allocate a greater percentage of the BNPP MAD 5 Index towards components of the Hypothetical Portfolio that would have resulted in the Hypothetical Portfolio with the highest past returns subject to a certain level of volatility and weighting constraints.

BNPP MAD 5 Index also includes an additional risk control mechanism which seeks to maintain its short-term volatility at the volatility target of 5% on a daily basis. This mechanism adds a further layer of volatility control to the value of the Hypothetical Portfolio with the goal of reducing volatility during unstable and unpredictable market periods.

BNPP MAD 5 Index is an "Excess Return Index" because its components are excess return and their returns are derived from changes in price (known as "price return") and profit or loss gained from rolling from one futures contract to another (known as "roll return"). Unlike Total Return Indices, it does not derive returns based on interest earned on cash or other collateral deposited in connection with the purchase of futures contracts (known as "collateral return").

The BNPP MAD 5 Index levels are net of rebalancing and repagination fees, incorporate a daily Maintenance Fee of 0.50% per annum and are published on Bloomberg under the ticker BNPIMADS Index.

### BNP Paribas MAD 5 Index Components

<table>
<thead>
<tr>
<th>Equity Futures Indices</th>
<th>BNPP US Equity Futures Index</th>
<th>BNPPFUS Index</th>
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<tbody>
<tr>
<td>BNPP Eurozone Equity Futures Index</td>
<td>BNPPFEU Index</td>
<td></td>
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<tr>
<td>BNPP Paribas Japan Equity Futures Index</td>
<td>BNPPFJP Index</td>
<td></td>
</tr>
<tr>
<td>Bond Futures Indices</td>
<td>BNPP Paribas USD 10Y Futures Index</td>
<td>BNPPFUSD Index</td>
</tr>
<tr>
<td>BNPP Paribas EUR 10Y Futures Index</td>
<td>BNPPFE10 Index</td>
<td></td>
</tr>
<tr>
<td>BNPP Paribas JPY 10Y Futures Index</td>
<td>BNPPFJP10 Index</td>
<td></td>
</tr>
<tr>
<td>Commodity Indices</td>
<td>Bloomberg Commodity ex-Agriculture and Livestock Capped Index</td>
<td>BBUXALC Index</td>
</tr>
<tr>
<td>S&amp;P GSCI Gold Index Excess Return</td>
<td>SPOSGCPCF Index</td>
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</tr>
</tbody>
</table>

**Definitions**

A Rules-Based Index is an index where the weightings of the components are determined following a preset algorithmic set of rules and proprietary formulas.

A Futures contract is an agreement, to make and receive a cash payment based on changes in the price of a particular commodity or financial instrument at a pre-determined date in the future. The indices compiling the BNPP MAD 5 Index are Index Futures, which track the performance of certain futures contracts.

The Hypothetical Portfolio of the BNPP MAD 5 Index represents the basket of the index's eight (8) components, whose individual weightings are dynamically adjusted on a daily basis according to the BNPP MAD 5 Index methodology. There is no actual portfolio of assets to which any person makes any investment or has any ownership interest.

Volatility is the amount of price variation in an asset or security. High volatility means the price moves up and down in wide ranges over a period of time. Low volatility means that the price does not change as dramatically, but rather changes at a more gradual pace.

The bank for a changing world
Step-by-Step Composition of the BNP Paribas MAD 5 Index

**Diversification**

The BNP MAD 5 Index attempts to measure the hypothetical exposure to a range of asset classes and geographic regions by drawing on the performance of eight index components, which have been selected based on the following principals:

**Diversity in geographic zones covered**

The components that form the BNP MAD 5 Index are representative of three different geographic zones (U.S., Europe and Japan).

**Use of market benchmarks**

The components that form the BNP MAD 5 Index are futures-based indices tracking the performance of futures contracts referencing market benchmarks where such futures contracts are typically highly liquid and representative of market movement.

**Components representing multiple asset classes**

The components represent a range of generally non-correlated assets including equities, commodities and government bond futures which are sub-components of the components that comprise the Index.

A Diversified Index based on 8 Index Components

Definitions

*Liquidity* describes the degree to which an asset or security can be quickly bought or sold in the market without affecting the asset’s price.
Step-by-Step Composition of the BNP Paribas MAD 5 Index

Dynamic Allocation

On a daily basis, the BNP MAD 5 index dynamically rebalances the weightings of its components according to a proprietary rules-based methodology which seeks to identify weights for the components that would have resulted in the hypothetical portfolio with the highest past returns subject to a certain level of volatility and weighting constraints. This can be explained in three steps:

Step 1
The BNP MAD 5 Index begins by creating a universe of potential hypothetical portfolios where the components are differently weighted across the board and under weight constraints.

Step 2
The BNP MAD 5 Index then tests the different portfolio combinations in the universe, considering only those that have demonstrated long term realized volatility below a certain level.

Step 3
Out of the remaining portfolios after step 2, the final hypothetical portfolio is chosen based on the BNP MAD 5 index rules and a proprietary methodology which takes into account momentum - investing principles that allocate more to recent outperformers and less to recent underperformers.

Definitions

The **Realized Volatility** of a financial instrument describes its historical volatility over a given time period.

A **Momentum-Based Investment Strategy** seeks to capitalize on positive market price trends based on the supposition that positive market price trends may continue.

For Illustrative Purposes Only.
Daily Volatility Control

On a daily basis, the Hypothetical Portfolio of the BNP Paribas MAD 5 Index targets an annualized realized volatility of 5% utilizing a set of rules that seeks to manage the hypothetical portfolio's short term volatility on a daily basis in changing market conditions. This mechanism complements the control over long-term volatility which is part of the BNP Paribas MAD 5 Index's dynamic allocation methodology (See Step 2 under "Dynamic Allocation"). The Realized Volatility of the daily hypothetical portfolio is the highest trailing 21 day historic volatility calculated over a sliding 20 day period. If the realized volatility exceeds the 5% target volatility rate on any day, the BNP Paribas MAD 5 Index will reduce the weight of the hypothetical selected portfolio and rebalance it with a non-remunerable hypothetical cash position. Based on the realized volatility, the BNP Paribas MAD 5 Index may be partially or wholly uninvested, and will not earn interest or any other return with respect to that cash position.

For Illustrative Purposes Only
The charts and tables below show an analysis of the levels of the BNPP MAD 5 Index. The BNPP MAD 5 Index was launched on January 25th, 2016. The prior performance shown is simulated.

Index Return Summary

<table>
<thead>
<tr>
<th>Since Index Start</th>
<th>Last 1 Year</th>
<th>Last 2 Years</th>
<th>Last 5 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annualized return</td>
<td>5.55%</td>
<td>1.99%</td>
<td>1.79%</td>
</tr>
<tr>
<td>Volatility</td>
<td>4.73%</td>
<td>4.93%</td>
<td>4.53%</td>
</tr>
<tr>
<td>Sharpe ratio</td>
<td>1.77</td>
<td>0.40</td>
<td>0.40</td>
</tr>
</tbody>
</table>

Source: Bloomberg, BNP Paribas as of September 28th, 2018.

Index Information

<table>
<thead>
<tr>
<th>Source</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloomberg/Looker</td>
<td>Bloomberg/MAD5 Index</td>
</tr>
<tr>
<td>Archipel Agence</td>
<td>BNP Paribas Eurozone Index</td>
</tr>
<tr>
<td>Index Sponsor</td>
<td>BNP Paribas</td>
</tr>
<tr>
<td>Index Type</td>
<td>Index Return</td>
</tr>
<tr>
<td>Weighting</td>
<td>Daily Rebalancing</td>
</tr>
<tr>
<td>Maintenance Fee</td>
<td>1.17% per annum, charged on daily basis</td>
</tr>
<tr>
<td>Last Publication Date</td>
<td>January 25th, 2016</td>
</tr>
<tr>
<td>Index Start Date</td>
<td>December 31st 2002</td>
</tr>
</tbody>
</table>

Index Level and Past Hypothetical Portfolios Weightings (Actual and Hypothetical Simulations)

The charts and tables below show an analysis of the levels of the BNPP MAD 5 Index. This index reflects the deduction of fees and charges. Past performance is not an indicator of future performance. Sources: Bloomberg, BNP Paribas as of September 28th, 2018. The prior performance shown is simulated and must be considered illustrative only. The presentation of hypothetical data reflects the deduction of fees and charges. These simulations are the result of estimates made by BNP Paribas at a given moment on the basis of parameters selected by BNP Paribas, certain assumptions that may or may not hold in future periods, if market conditions are as given moment and of historical data, which should not be used as guidance, in any way, of the future results of the BNPP MAD 5 Index.

Source: Bloomberg, BNP Paribas as of September 28th, 2018.

\[\text{BNPP MAD 5 Index} \quad \text{S&P 500\textsuperscript{®} Index} \quad \text{Index launch date 25 January 2016} \]
The BNP PAD 5 Index is a new index, launched on January 25th, 2014. The performance shown before that date is hypothetical past performance, based on hypothetical back-tested information. This website also contains certain performance data based on back-testing, i.e., calculations of the hypothetical levels of the BNP PAD 5 Index as if it had actually existed during a defined period of time, and may in certain circumstances contain simulated levels information where the BNP PAD 5 Index or asset described has recently been established or issued. Further, you must note that such analysis is based on a number of working assumptions that may not be capable of duplication in actual trading terms. Unlike actual performance records, hypothetical or simulated performance, returns or scenarios may not necessarily reflect certain market factors such as liquidity constraints, fees and transaction costs and must be considered Illustrative only. Actual historical or back-tested past performance does not constitute an indication of future results. The actual performance of the BNP PAD 5 Index may bear little relation to the hypothetical historical results.

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The BNP PAD 5 Index has limited public information.
Selected Risks and Considerations Associated with the Index

The price, level, or value of the Index Components used in the BNP MAD S Index may differ from other publicly available prices.

The factors closing the subject MAD S Index (the "BNP MAD S Index") are intended to reflect the performance of the relevant futures contracts on a daily volume-weighted average price, subject to a set of trade filters selected by the Index Sponsor to exclude trades with certain conditions provided by the Index Sponsor which are not-tradable or non-tradable. Such levels are calculated by the Index Calculation Agent and an administrative fee (the "administrative fee") is not publicly available and may not reflect all trades reported by the relevant futures exchange. The daily closing price or any other price of the underlying futures contract may vary from the fixed or harmonized average price reflected by the level of the applicable BNP MAD S Component. In addition, a BNP MAD S Component Index may be subject to a disruption due to the unavoidability of a volume-weighted average price despite regular trading of the underlying futures contract and the availability of a closing price for each contract.

The BNP MAD S Index's target volatility feature may reduce its appreciation potential.

Under normal circumstances, equity or commodity futures may exhibit significantly higher volatility than the target volatility of 5%. Accordingly, the "volatility control" mechanism of the BNP MAD S Index may have the effect of clearing allocations among eligible components in the BNP MAD S Index toward those components that provide exposure to fixed-income assets (which typically have lower volatility than components that provide exposure to equity or commodity futures) or to cash (which has zero volatility). Index Components typically have lower return potential than components that typically have higher volatility, and any allocation to cash will earn no return at all.

Moreover, if the BNP MAD S Index has a relatively high allocation to components that provide exposure to fixed-income assets, it will be particularly sensitive to factors that adversely affect the value of fixed-income instruments, such as increases in interest rates or declining perceptions of credit quality. A high allocation to components that provide exposure to fixed-income assets may also cause the BNP MAD S Index to underperform a portfolio more heavily weighted with higher volatility assets under certain circumstances. For example, in an equity bull market that is accompanied by rising interest rates, a portfolio heavily weighted with components that provide exposure to fixed-income assets might decline in value as a result of the rising interest rates, while a portfolio heavily weighted with components that provide exposure to equities would appreciate in value.

Other key risks:

• The BNP MAD S Index involves daily rebalancing that is applied to the Index Components by asset type and geographic region.

• Changes in the value of the Index Components may alter each other.

• The BNP MAD S Index is subject to risks associated with non-US markets.

• The futures contracts underlying the Index Components are subject to currency exchange risk. The BNP MAD S Index contains a currency hedge mechanism that seeks to reduce losses due to currency exchange risk. Such strategies may also reduce or eliminate gains from currency exchange risk.

• BNP Paribas is the sponsor of the Equity Futures Indices and Bond Futures indices that underlie the BNP MAD S Index.

Important Information

The BNP MAD S Index (the "BNP MAD S Index") is the exclusive property of BNP Paribas ("BNP") and is determined, composed and calculated by BNP or its affiliates. BNP, BNP MAD S Index and the BNP Paribas MAD S Index (collectively, the "BNP MAD S Index") are trademark or service marks of BNP, BNP MAD S Index and the BNP Paribas MAD S Index (collectively, the "BNP MAD S Index") are trademark or service marks of Standard & Poor's Financial Services LLC and have been licensed for use by BNP. The Bloomberg Commodity Indices and Livent-composed Indices are trademarks of Bloomberg Finance L.P. ("Bloomberg") and have been licensed for use by BNP. Underlying futures contracts are not available for sale by non-U.S. individuals.

BNP MAD S Index Benchmark Date

The BNP MAD S Index is calculated by a calculation agent, which is a "credentialed party" as defined in the Index Calculation Agreement. The calculation agent is responsible for calculating and disseminating the BNP MAD S Index and providing all relevant information necessary to calculate the BNP MAD S Index as specified in the Index Calculation Agreement. It should be noted that BNP MAD S Index includes any and all relevant information provided by the calculation agent to BNP MAD S Index Benchmark Date.

MAD S Index Benchmark Date

The BNP MAD S Index may be used as the underlying index for any investment products. The BNP MAD S Index is calculated and disseminated daily by the Index Calculation Agent. In addition, the BNP MAD S Index methodology mandates certain costs in the strategic which avoid replication and rebalancing in running the BNP MAD S Index.

BNP MAD S Index Benchmark Date

Any party may select a BNP MAD S Index methodology from time to time and accepts no liability for any such amendment or adjustment. BNP MAD S Index is not under any obligation to continue the calculation, publication or dissemination of the Index Components used in the calculation of the BNP MAD S Index or accepts any liability for any suspension or interruption in the calculation thereof. Neither BNP nor any of its affiliates accepts any liability in connection with the publication or use of the Index Components in the calculation of the BNP MAD S Index or any delayed, revised or untrue calculation thereof. BNP MAD S Index is calculated on an "as is" basis and may not correspond to any other BNP MAD S Index in any way, whether sponsored or propagated by the same or any other person.

Underlying components are calculated at the end of each business day and reflect the relevant index calculation date. The Index Components used in the BNP MAD S Index may include any relevant index component. The Index Components used in the BNP MAD S Index may include any relevant index component.

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